Level L top 50 Questions:

1- Explain using examples, the meaning of these computer terms

a) **Macro**: a single instruction/character/key that replaces a set of instructions/keyboard strokes. A macro is used to automate a frequently-used sequence of instructions.
Example: A macro to print an area of a spreadsheet or run a database query.

b) Buffer: A temporary store to hold data being transferred between two devices that work at a different speeds.
Example: The printer speed is slower that the CPU processing speed. When a document is to be printed, it gets transferred to the buffer. The printer continues the printing from the buffer while the CPU does other tasks.

c) **Polling:** Repeated checking of a device in a multi-access system to see if it is ready to transmit data. If it is ready, it is instructed to transmit the data. If it is not ready, it passes the chance until the next time it is checked by the computer. The CPU checks if the devices need attention by going round one after the other.
Example: checking source of interrupt

d) **Handshaking:** Exchange of signals between devices to establish readiness to transfer data.
Example: when a document is to be printed, the CPU signals to the printer and the printer signals back when it is ready to receive more data.

e) Multimedia: A mixture of text, audio, video, graphics and animation.
Examples: A presentation combining text, pictures, sound, etc and a game/software/film stored on a DVD-ROM

f) **Simulation:** Studying the behavior of a system by using a model to represent a real life situation. Results can be predicted.

Examples: Simulating queues in a supermarket, mathematical modeling, flight simulator and modeling hazardous chemical reaction

g) **Validation:** The checking by a computer of data at the input stage. Usually type, length , presence and range checks are carried out on the entered data

Examples: validating a student's mark [it should be from 0 to 100 (range check) and should be numeric (type check)] and using check digits on bar codes

h) **Interrupt:** **A** signal from some device seeking the attention of the processor. The execution of the current program is suspended and control is passed to service the interrupting device. The execution of the suspended program resumes without error after that.

Examples: power failure, division by zero, illegal machine instruction, printer is out of paper, disk drive is not ready, pressing break key, etc.

i) **Virtual reality:** A simulation that the user interacts with as if he/she is in a real experience. Special devices are needed such as data goggles, gloves, headset, special suit fitted with sensor, motors to provide physical movement

Example: moving around in a 3D model of a building using special devices , playing 3D arcade games

j) **Job Control Language:** A special language which allows the user to communicate with the operating system. It is used to identify the user of the job, the start and end of the job and its requirements. It is used in batch processing systems.

k) **Stepwise refinement:** The process used in top-down design to break the steps needed to solve a problem into smaller and smaller subparts. Each part is repeatedly replaced by a more detailed one that satisfies the same requirements

l)**Video-conferencing:** It refers to using the Internet/ISDN link to establish a telecommunication of audio and video to bring delegates at different sites together for a meeting. It requires the use of devices such as microphones, speakers, cameras, monitors, etc. It is useful for a company that has branches all over the world

m) **Electronic scabbing:** The ability of managers to switch computer processing tasks from striking clerks in an office/location to non striking clerks in another location

n) **Gateway:** A link (hardware/software) that allows networks/systems to communicate. It uses telecommunications /telephones and converts data passing through. (A computer in a LAN can communicate with a computer on a WAN)

o) **Assembler:** A program that translates an assembly language source program into machine code object program. The translation is a one-to-one translation. The assembler is written for a particular machine.

p) **Logic gate:** It is an integrated circuit /electronic device. The inputs to a logic gate are binary digits and the output of a logic gate is either 0 or 1. There are different logic gates represented by different symbols.
Examples: NOT, AND, OR, NOR, NAND

q) **Search engine:** Software that a user can use on the Internet to search for specific information on a particular topic or for particular sites. It usually provides advanced search options. Locating sites and information is based on certain key phrases/words.

r) **Gantt chart:** A Gantt chart is a horizontal bar chart developed as a production control tool. Frequently used in project management to provide a graphical illustration of a schedule that helps to plan, coordinate, and track specific tasks in a project. It illustrates the start and finish dates for each task.

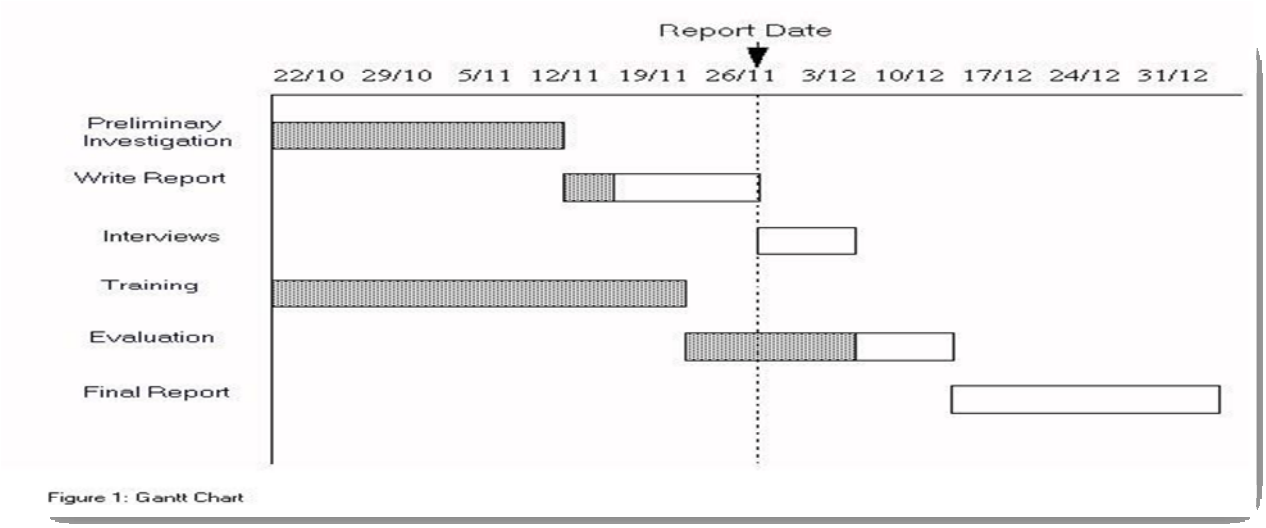
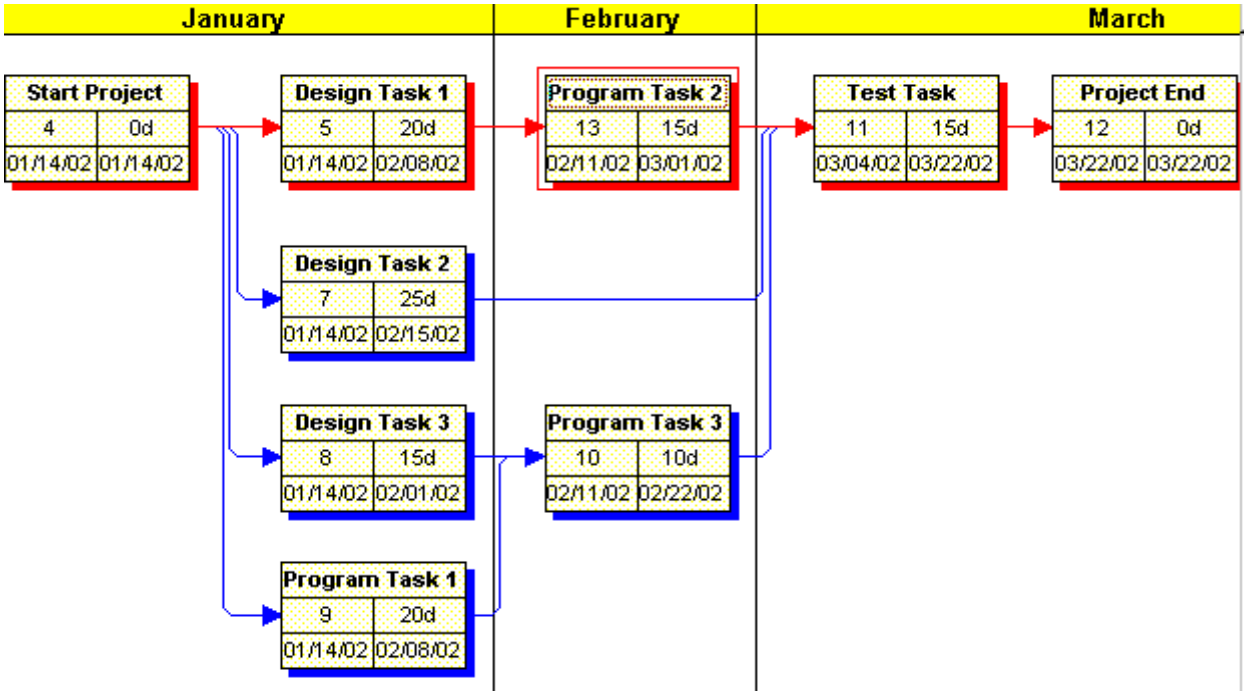


Figure 1: Gantt Chart

s) A PERT chart: a project management tool used to schedule, organize, and coordinate tasks within a project. A PERT chart presents a graphical illustration of a project as a network diagram consisting of numbered nodes (either circles or rectangles) representing events, or milestones in the project linked by labeled vectors (directional lines) representing tasks in the project.



2- State five tasks that an operating system carries out:

a- It controls the use of peripherals such as disk drives and printers.

b- It controls the loading and running of programs.

c- It organizes the use of the main store (memory management)

d- It maintains security

e- It allows the user to communicate with the computer

f- File management tasks such as save, load , copy, delete, etc

3- A factory uses computer-aided design (CAD) and computer aided manufacture (CAM) to design and make parts of racing bikes

(a) State three software features(in addition to scaling) that should be available on the CAD system .

1- Rotation

2-Reflection

3-Accuracy

4- 3D drawing

5- Modifying stored drawings

6- Automatic calculations of cost, surface area, volume

7- Links to CAM

(b) Describe two operations of the CAM system

1- The computer sends instructions to the machine to select tools and use them.

2- CAD instructions are converted to instructions for the processor controlling the CAM equipment

(c) state two advantages (in addition to speed) *for the factory* of using the CAD software rather than producing the designs manually.

1- Changes to the designs can be made quickly

2- Allow the creation of 3D drawings of objects and these drawings can be viewed from any angle

3- Since CAD systems offer greater accuracy, the errors are reduced in the design leading to better design

(d) Describe two benefits of the CAM system

1- Since a computer controls the tools, less or no human intervention and this lead to better quality products

2- Increase in productivity since the machine can work 24 hours

3- Can make modifications to products without the delay of change in setup

4- What is batch processing? Give two applications which are suitable for batch processing

Batch processing is processing that does not start until all the data is collected. No user intervention is needed once processing starts. JCL commands are used to control the execution. Examples of applications: electricity billing , printing the payroll, marking multiple choice exams

5- A business uses the Internet for selling their products and uses e-mail to communicate with the customers

(a) Describe two advantages for the business of using the Internet for selling their products

* cheaper – no brochures, no leaflets, etc

* World wide exposure (greater number of customers)

* saving the cost of renting large showrooms

* can employ fewer staff

(b)Describe two benefits for the customer of using e-mail to communicate with the business

* Faster than normal mail
* Cheaper than post
* Easier to get proof of confirmation of receipt
* Can be used any time

(c) Describe the process used by a customer to access the information on this network

* Opens the merchant's web site using a web browser (the user types the URL/web address of the site)
* Decides what item he wants to purchase and follows the links
*Items chosen are stored in the transaction server ➔ verification of information takes place ➔ the concerned bank is contacted to get an authorization for charging the card's account

6- In small schools, it is difficult for the students to meet others of their own age and it is difficult for the school to teach some subjects.
Give two ways computers can be used to overcome these difficulties.

1- Students can communicate with each other using e-mail or chatting rooms available on the Internet

2-Using multimedia software makes it possible to develop interactive and attractive courses. Simulations software allow students to see experiments

7- The following spreadsheet shows the usage (in hours) of the internet during one week compared with the same week the previous year.

	A	B	C	D	E
1		1999 hours	2000 hours	change	% change
2	Monday	25	30	5	
3	Tuesday	48	64		
4	Wednesday	30	15		
5	Thursday	20	40		
6	Friday	70	80		
7					

The % change from 1999 to 2000 is (change* 100/ (1999 hours))

(a) write a formula that should be inserted into cell E2 to calculate the %change.

=(D2 * 100)/B2

(b)Explain how you would place similar formulae in cells E3 to E6 without entering each separately

first method : Highlight E2 -> copy -> Highlight E3 : E6 -> patse

Second method: Move to cell E2 and drag formula to cells E3:E6

(c) what formula is inserted in D2? =C2-B2

(d) If the value in cell B3 is changed to 96, what cell(s) will change automatically? cells D3 and E3

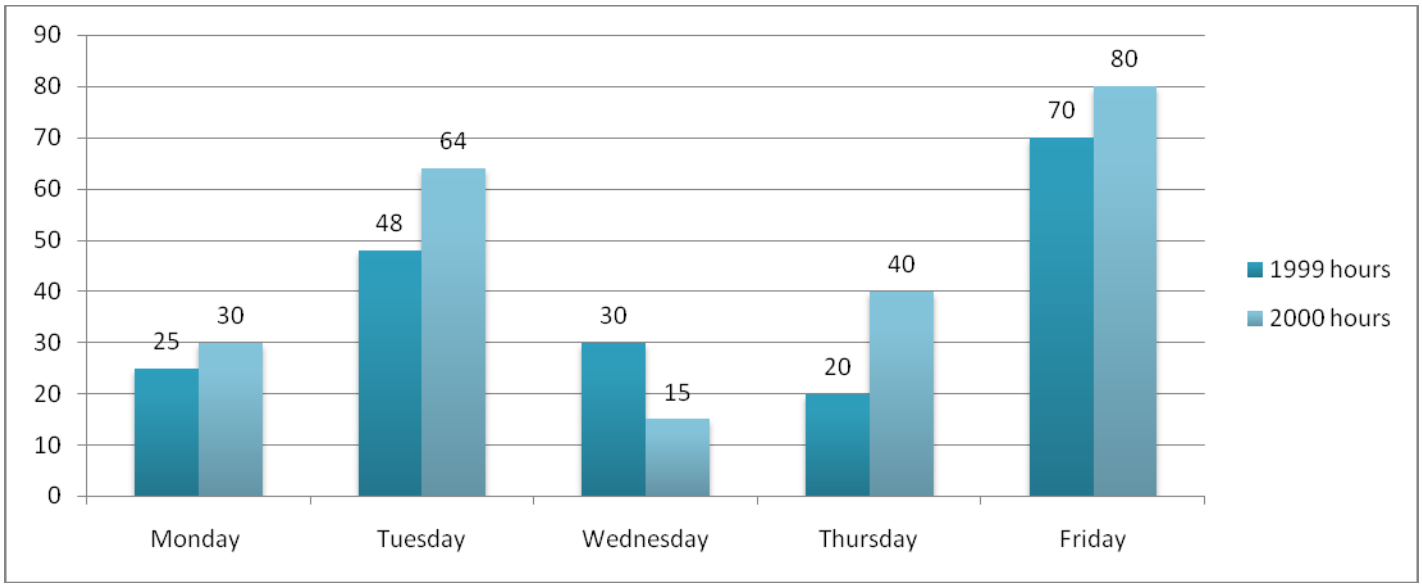
(e)Explain how the contents of E2 can be displayed to show one decimal place.

Right click in cell E2 ➔ Format cells ➔ click on the number tab ➔ number ➔ set decimal place

(f) A labeled chart is needed to compare the hours for this week in 1999 and 2000. On the spreadsheet, shade the cells needed to produce the chart

	A	B	C	D	E
1		1999 hours	2000 hours	change	% change
2	Monday	25	30	5	
3	Tuesday	48	64		
4	Wednesday	30	15		
5	Thursday	20	40		
6	Friday	70	80		
7					

Note: The chart that will be produced can be as follows:



8- (a) An expert system may help a doctor diagnose an illness.

(i) Describe one advantage and one disadvantage for the patient , if the patient is to enter his/her symptoms.

Advantage: While waiting for the doctor, the patient answers the questions and this will reduce the time needed with the doctor. The patient may feel comfortable answering the questions to a machine.

Disadvantage: The patient may answer a question correctly if not understood and this will let the expert system give incorrect diagnosis .

(ii) Explain the steps needed to create this expert system.

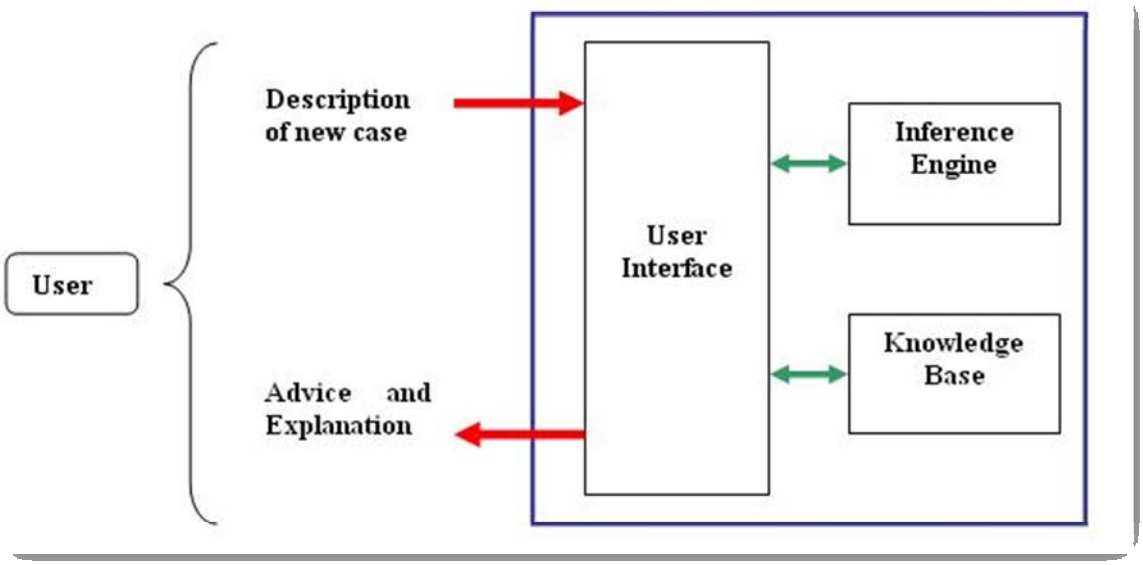
**Gathering information from the experts (the doctors) in the field*

**Create a knowledge base*

**Input the data to the knowledge base*

**Create the rules and the questions database (inference engine)*

**Create the output display*



(b) Describe how an expert system can be used in the search for minerals. Mention the input, processing and output.

Inputs:

**Depth and quantity of the mineral in the area.*

** Type of mineral required.*

**Properties of soil and rocks in the area.*

Processing:

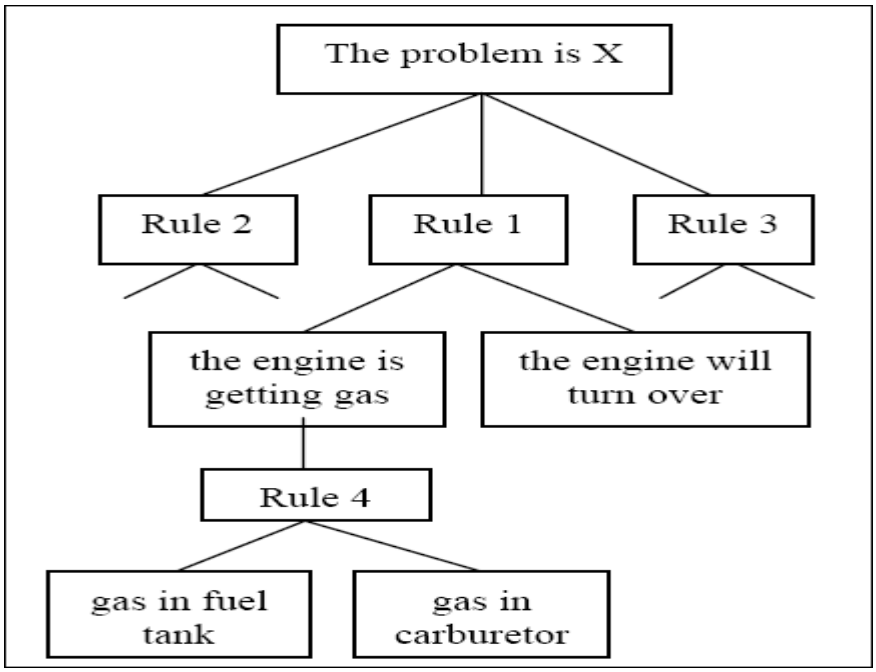
Searching the knowledge base and making comparisons

Outputs

predictions of types and depths of minerals that could be found with reasons for these deductions and the approximate cost of extraction

(c) Describe how an expert system could be used to help in diagnosing faults in electronic car management systems.

The mechanic inputs the problems. The expert system searches the database inference engine/rules and suggests possible faults and solutions with probabilities and reasons.



9- A garage uses a database to keep details of the cars in stock . Part of the database is shown below.

REF	MAKE	DOORS	YEAR
F214	FORD	3	2007
R317	RENAULT	4	2004
F219	FORD	5	2006
M412	MAZDA	5	2003
T517	TOYOTA	3	2006
C615	CITROEN	4	2004

(a) **State the name of a field that contains :**

i) **numeric data : *DOORS and YEAR***

ii)**alphabetic data: *MAKE***

(b) **Suggest two other fields that could be usefully added to this database : *model , registration number , price, color***

(c) **Which field could be used as the key field and give a reason why?** *The REF is the key field since its value is unique*

(d) The following search condition is input.

(REF contains "M") OR (YEAR>2005) write down the output using only the REF field

REF
F214
F219
M412
T517

(e) The database is sorted into ascending order on the year field. write down the output using only the REF field

REF
M412
C615
R317
T517
F219
F214

10- A tank is to hold water for use by customers in a hotel. The temperature and level of the water in the tank are controlled by a microprocessor.

(a) Give two devices needed inside the tank to provide input data for the microprocessor

****water level sensor***

****Temperature sensor***

(b) Give two devices which are controlled by the microprocessor.

Water valve and the water heater

(c) Describe the processing that takes place in this system

Water level sensor sends data to the processor .

if water level < minimum water level ➔ the computer sends a control signal to open the water valve

if water level > maximum water level ➔ the computer sends a control signal to close the water valve

The temperature sensor sends data to the processor.

if temperature degree < minimum temperature degree ➔ the computer sends a control signal to turn on the water heater

If temperature degree > maximum temperature degree ➔ the computer sends a control signal to turn off the water heater

11- (a) Consider a list of 50 marks. Each mark is out of a 100 write an algorithm to read each mark, validate it (if the mark is out of range, it must be re-input). The algorithm should print the **smallest mark, largest mark, range of marks and average mark.**

```
largest-mark= 0
smallest-mark=100
Total=0
for x=1 to 50
    repeat
     Input mark
    until 0 <= mark <= 100
    If mark> largest-mark then largest-mark= mark
     If mark< smallest-mark then smallest-mark= mark
     Total=Total + mark
next x
average= Total/50
Print "Smallest Mark is =", smallest-mark
Print "Largest Mark is =", largest-mark
Print "Average Mark is =", average
Print "The range of Mark is from", smallest-mark, "to", largest-mark
```

(b) Give two advantages of using top-down design when solving such a problem.

(1) The program will have fewer errors because each module can be written, debugged and tested separately

(2) The program can be developed faster as it can be written by several programmers (each programmer writes a part of the program)

(3) The logic of the program is easier to follow/understand

12- (a) Describe two differences between high-level and low-level languages

High-level language	Low-level language
Uses English-like statements (Easy to understand and debug)	**Uses symbolic names and addresses**
Portable (not machine specific)	**Machine oriented (specific)**
One-to-many translation to machine code	**One-to-one translation to machine code**

(b) What is the relationship between object code and source code?

Source code is the high level/assembly program written by a programmer while object code is the machine code program generated when a compiler /assembler translates the source code.

(c) describe the differences between a compiler and an interpreter

compiler	interpreter
produces an object code	**does not generate an object code**
Each program instruction is translated once	**Translates each instruction every time it executes it**

13- Describe five rules of the data protection act

***Data should not be given to a third party without permission**

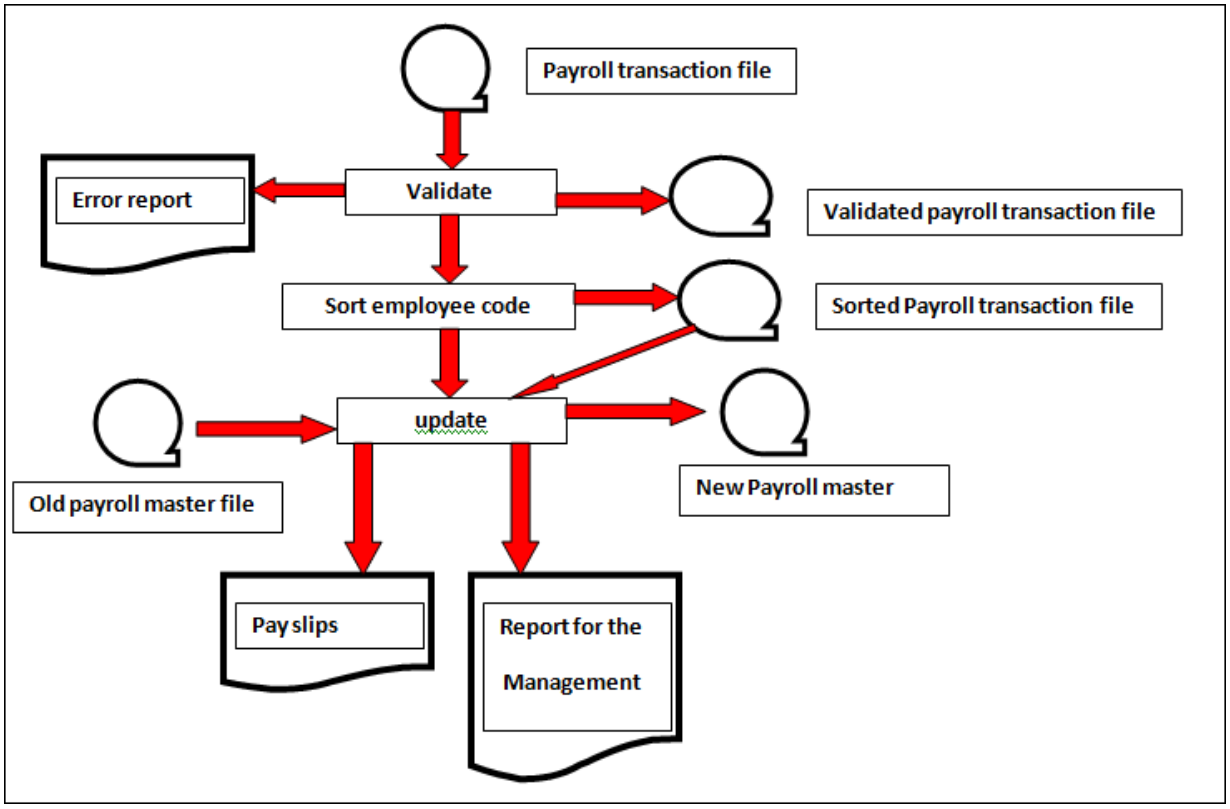
***Data must be accurate and up-to-date**

***Data should not be kept any longer than necessary**

***Individuals must have the right to see data stored about them and argue any incorrect data**

***only required data should be collected and used for the specific purpose or reason only**

14- Draw a system flowchart that shows how a payroll transaction file is used to update a payroll master file and produce pay slips and reports for the management. Records of the payroll master file are stored on a magnetic tape in order of employee code.



15- (a) Give two items of user documentation

User manual (installation and running instructions), how to enter data, how to print, how to save, sample screens, how to interpret the output

(b) Describe two reasons to why user documentation is needed

To show the user how the system works (how to install and run the system)

(c) Give two items of technical documentation that are not part of the user documentation

Descriptions of algorithms (flowcharts, program listings and or pseudo code) , test data and results of testing, file structures, list of variables

(d) Describe two reasons to why technical documentation is needed

It helps the person maintaining the system/future programmers update and maintain the system (correct any errors that may occur later and help improve the system to do new tasks or use new hardware/software)

16- Read this algorithm

Total =0
Input Number
for Count is one to Number
Input Mark
Add Mark to Total
Next Count
output Total/Number
Dry run the algorithm using the following data
5,6,7,8,9,10

count	Mark	Total	Number	output
		0	5	
1	6	6		
2	7	13		
3	8	21		
4	9	30		
5	10	40		
6				8

A) What is the purpose of total and what is its final value? **To store the total of the marks entered**
B) What is the output? **8**
C) Rewrite the algorithm using repeat/until structure

```
Total =0
count=1
Input Number
Repeat
   Input Mark
    Total= Total +Mark
     count = count + 1
until Count = Number +1
```

output Total/Number

17- Describe two advantages and two disadvantages of using robots in the industry

Advantages :

1- Robots can work 24/7 and this increases productivity

2- Robots work with the same accuracy (no human errors) and this maintains the same quality

3- Robots reduces labor costs

4- Robots can do tasks unfit for human such as carrying heavy parts

disadvantages:

1- They can only cope with particular situations they are built and programmed for.

2- Cannot deal with unexpected situations such as power cut

3- Productivity will be behind if the robots break down

4- Setting up the system and programming the robot is costly and time consuming

18- A school uses data-logging to collect data about temperature, pressure, wind speed and direction.

(a) Describe the hardware and software needed to collect the data

Hardware :

- **Thermometer (temperature sensor)for measuring temperature**
- **Barometer (air pressure sensor) for measuring air pressure**
- **Anemometer (wind speed sensor) for measuring wind speed**
- **Wind vane to determine the wind direction**
- **Computer**
- **ADC**

Software:

spreadsheets, databases and /or graphics to store the data , control program , software to get data from sensors

(b) How can this data be used to predict the next day's weather

The system compares known weather data from previous years with the new data received and then carries out statistical/probability calculations to make predictions of most likely weather

19- A school has linked its stand-alone computers to form a network. Describe three advantages and three disadvantages of doing this

Advantages :

1- Students can share software data, and internet connection

2- An email message can be sent to all terminals

3- Students can share hardware like common printer

4- Students can share an internet connection

5- Students can communicate (send messages to each other)

disadvantages:

1-Use of expensive cables

2- A virus can spread to all terminals

3- Security measures are needed (user names and passwords)

4- Students may waste time chatting about things not related to the lesson

20- A microprocessor controls an oven used to bake bread.

(a) Describe the input data needed by the microprocessor.

from the user : required time and required temperature

from the sensors: time so far, current temperature

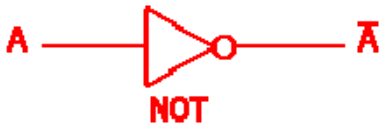
(b) Write an algorithm that uses the input data to control the process of baking the bread

Switch oven on
set oven-temperature
set baking-time
oven-timer= 0 sec
While (oven-timer <= baking-time)
get current temperature from oven-sensor
if (temperature > oven-temperature) keep oven heater off
If(temperature < oven-temperature) Keep oven heater on
get oven-timer
Endwhile
switch oven off

21-

(a) Draw each of the logic gates below and its truth table:

i) NOT Gate



NOT gate	
A	$\bar{A}$
0	1
1	0

ii) AND Gate

2 Input AND gate		
A	B	A.B
0	0	0
0	1	0
1	0	0
1	1	1

iii) OR Gate

2 Input OR gate		
A	B	A+B
0	0	0
0	1	1
1	0	1
1	1	1

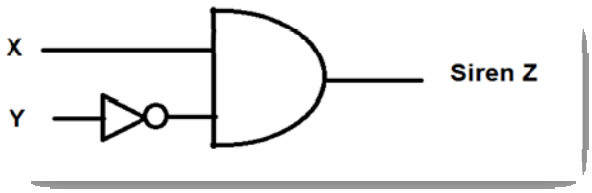
iv) NAND Gate

2 Input NAND gate		
A	B	$\overline{A.B}$
0	0	1
0	1	1
1	0	1
1	1	0

v) NOR Gate

2 Input NOR gate		
A	B	$\overline{A+B}$
0	0	1
0	1	0
1	0	0
1	1	0

(b) Draw a simple logic network representing the following scenario:
A siren Z will go on when switch X is turned on and switch y is turned off



X	Y	Z
0	**0**	**0**
0	1	0
1	0	1
1	1	0

22- A family uses their computer for home shopping, electronic banking and sending e-mail messages to their friends around the world

(a) Describe one advantage and one disadvantage of using this method for shopping

Advantage:

Avoiding crowds by shopping online from home, unlimited choices, saving travel costs, can shop any time

Disadvantage:

Security fears of giving credit card numbers over the Internet, they cannot touch the goods

(b) Describe two bank services which would not be available

i) **getting cash**

ii) **depositing a check**

iii) **closing/opening a bank account**

(C) Give two benefits of sending messages using e-mail rather than by the ordinary letter post.

i) **It can be sent any time**

ii) **Does not require stamps and so it is cheaper than post**

23- A database is used to store details of the employees in a company.

(a) State two precautions to protect the data against possible misuse

(a) Use of user names and passwords

(b) Restrict entry to computer room

(c) Encrypt the data

(d) Use locks on the hardware

(b) Give one situation when data would be

i) Inserted: A new employee joins the company

ii) amended : An employee changes his address or there is a change in status or salary

iii) deleted: An employee leaves the company

(c) Describe two precautions that should be taken to enable data recovery after a system failure.

a. Backup copies should be made regularly (or use of file generations) to re-load software/files when the system crashes

b. Keeping file dumps (printouts) to re-enter lost data

24- A desktop publishing (DTP) package is to be used to create a party invitation

(a) Give two ways of obtaining a picture to add to the party invitation.

(i) **Can import the picture from clip-art**

(ii) **Can create the picture using a drawing package and import it**

(iii) **Can download the picture from the Internet and paste it**

(iv) **Can scan the picture and paste it**

(b) Give four other features of the DTP package that could be used.

(i) It provides good facilities to format and arrange text and graphics together in an attractive way (text: font size, size color - graphics: crop, rotate)

(ii) Column flow

(iii) Banner heading

(iv) Borders and frames

(iv) Borders and frames

25- Market research predicts that many more employees will work from home.

(a) Explain how computer technology makes this possible.

It is a possible result of introducing ICT (Information and Communication Technology)

It may involve using phone/ADSL/Internet connection , fax, e-mail, Internet browsers, communications software, etc.

These technologies make it possible for the employee to interact and communicate with the company and send/receive work assignments.

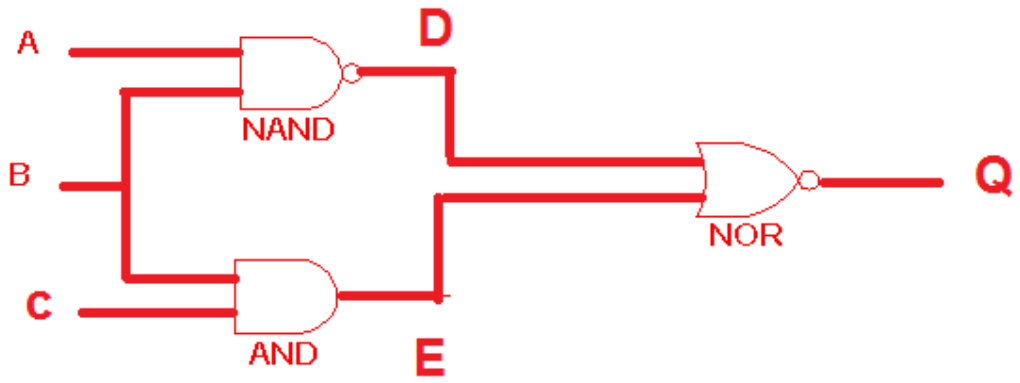
(b) Suggest one advantage and one disadvantage of this trend to each of the employers and the employees

Employees	
Advantage s	**Disadvantages**
It reduces time and money spent on travelling **More time with the family** **Sets own working hours**	**Cannot easily benefit from teamwork** **Distractions from children/visitors** **Must use an area of the house as an office**

Employers	
Advantage	**Disadvantage**
It saves the cost of having large offices **Possible to hire disabled people**	**It could be difficult for the manager to set up urgent meetings (more difficult to react quickly to changing situations)** **The employee may work for more than one company (difficult to**

	get company loyalty)

26- Construct the truth table for the following logic



network:

Since we have 3 inputs (A, B and C)➔ 2^3 = 8 possible input

A	B	C	D	E	Q
0	0	0	1	0	0
0	0	1	1	0	0
0	1	0	1	0	0
0	1	1	1	1	0
1	0	0	1	0	0
1	0	1	1	0	0
1	1	0	0	0	1
1	1	1	0	1	0

27- Interfaces enable computer users to interact with the operating system. State three advantages for using a graphical user interface (GUI) for loading programs and files.

a) Prevents typing mistakes

b) No need for remembering and typing long and complex command

c) User friendly/easy to select (the user clicks on icons to select)

d) clicking on icons is fast than typing commands

28- A bank introduces banking by telephone and machines that allow customers to withdraw cash outside the bank.

(a) Give one advantage for bank workers:

Deals with a less number of customers

Counts less cash and this reduces risk of making mistake

Workers can have more time to do more important tasks

(b) Give two disadvantages for bank customers:

(I) must remember security/PIN code

(II) can withdraw only a limited amount each day

(iii) cannot get immediate assistance if something goes wrong

29- Some customers use electronic fund transfer (EFT) to pay for purchases.***(Note : EFT the transfer of money between bank accounts electronically using special software)***

(a) Give one advantage to the customer

The customer does not have to carry cash (less risk of money stolen/lost)

(b) Explain one advantage to the bank

The bank will get benefit from the charges paid by the customer and the

supermarket

30- An automatic washing machine has a microprocessor. Describe the input ,processing and output stages when the washing machine is used.

Input data	Processing	output
Washing /drying times(setting the timer knobs)	**Converting data from analogue to digital form**	**Switching the dryer on/off**
Required program cycle	**Check if it is time to start each stage: rinsing , washing , and drying**	**Switching the water supply on/off (closing /opening water valves)**
Water temperature	**Comparing the current water and temperature levels with required levels**	**Switching the heater on/off**
Pressing of buttons	**Converting data from digital to analogue form**	**Switching the washing tub motor on/off**

31- A record structure in a stock control file contains, among other fields:
Stock code, Stock name and unit cost
the computer is to produce orders for items automatically.

(a) Name four other fields that should be included in the record.

(1)Stock level: number of units available in stock

(2)Re-order level: number of units that when stock level falls below the item should be ordered

(3)Order level: number of pieces to order

(4) Supplier code: To link to the suppliers file

(b) Describe how the computer produces orders for items

The computer searches the file for all items with reorder level is greater than the stock level. Details of these items are stored in a second file and sorted on supplier code.

Print the orders by using this file and the suppliers file. The items are marked to indicate an order has been placed.

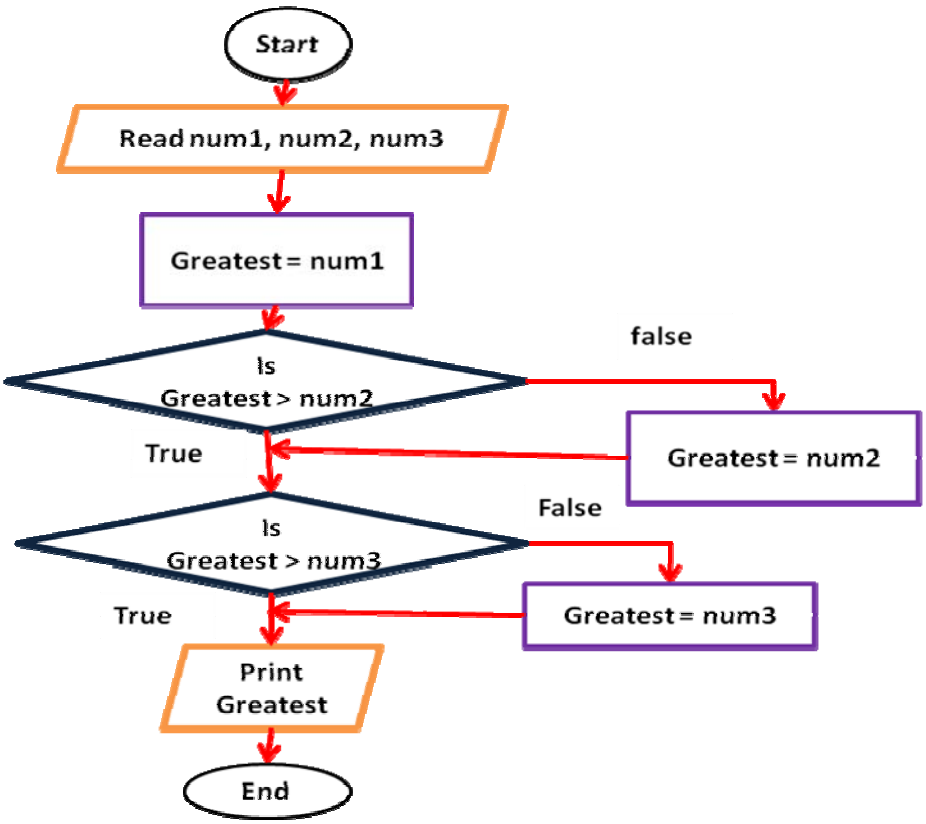
32-

(a) Explain the difference between a program flowchart and a systems flowchart

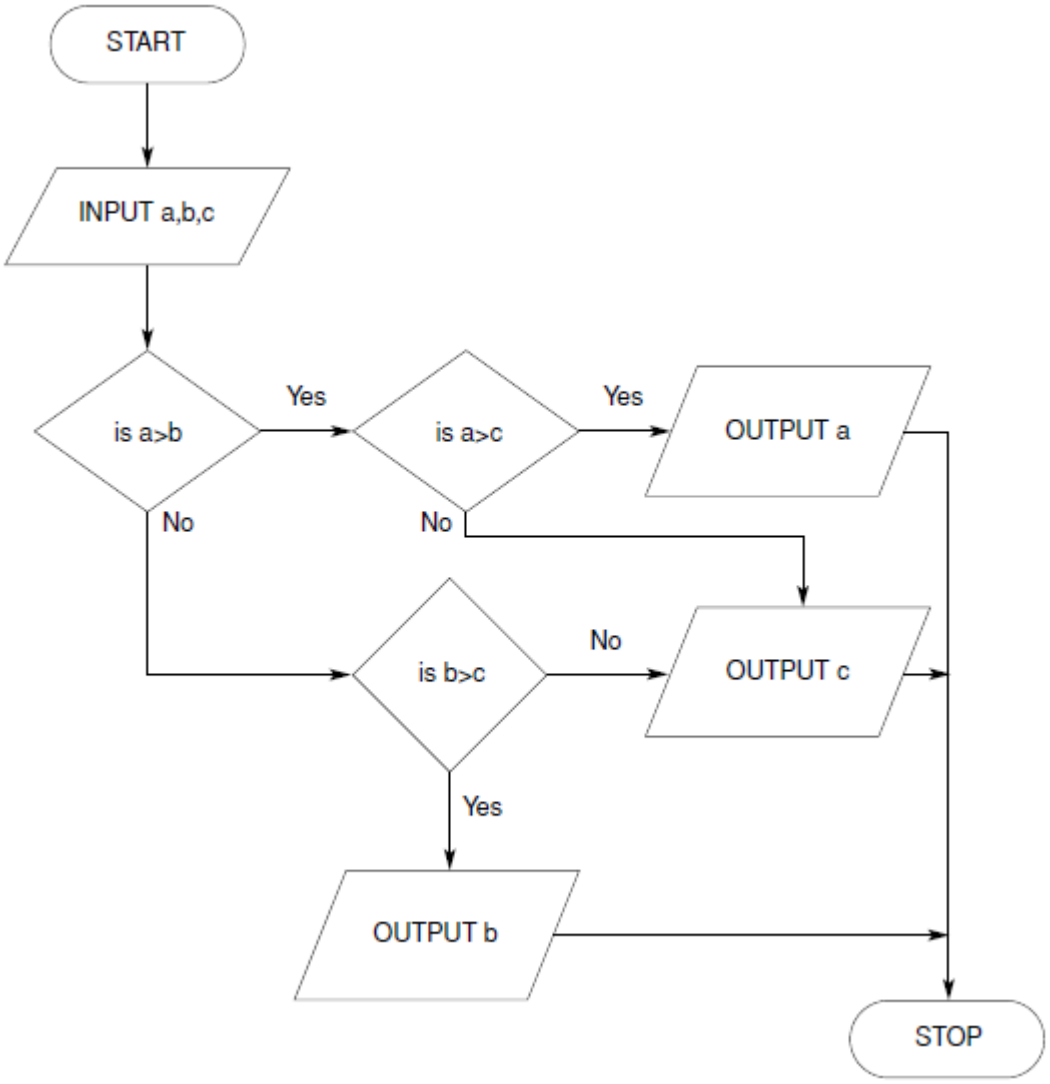
program flowchart	System flowchart
A diagram showing the sequence of operations performed by a computer program	A diagram representing the operations on data in an information processing system. Examples : using a transaction file to update a master
No graphical presentation of hardware devices	It shows the storage devices used in the system

(b) Draw a program flowchart to input 3 numbers and then determine and print the largest

<u>program flowchart</u>



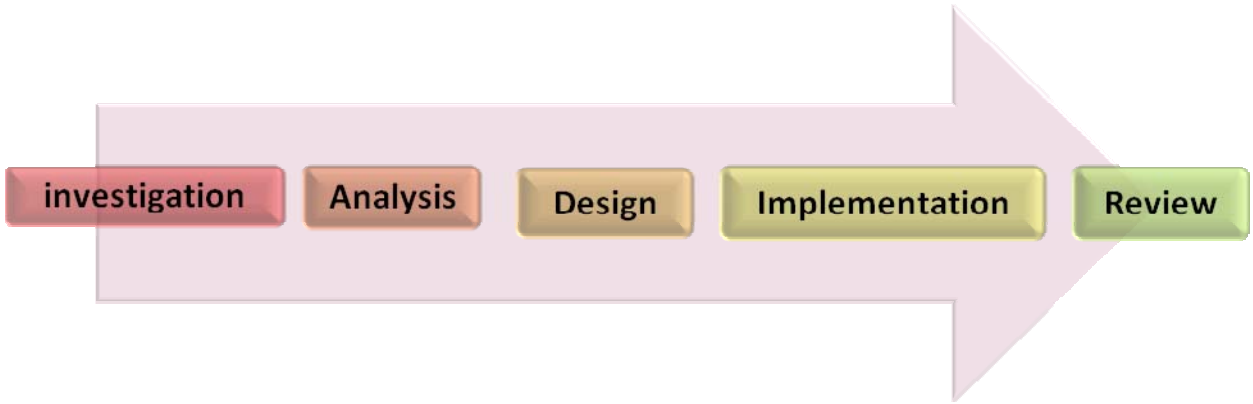
OR


START
INPUT a,b,c
is a>b
Yes
is a>c
Yes
OUTPUT a
No
No
is b>c
No
OUTPUT c
Yes
OUTPUT b
STOP

33- The manager of a paint-manufacturing company wants to install a computer system to organize the stock in the warehouse and keep files on the suppliers.

(a) Write the following stages of the system development in order and describe the tasks done in each stage

review analysis implement design investigate



Investigation: Decide exactly what the problem is. Part of investigation is to collect facts about the system

Analysis: Study the existing system in details. Carry out a feasibility study and produce a feasibility report to decide whether to continue with getting a new system.

Design: Specifications of

- **Input/output**
- **Files: record structure and access method**
- **Processing: designing the programs themselves**
- **Security measures: identify who has access to which data and functions of the system**
- **Test data and testing methods**
- **Hardware/software: specify what hardware configuration and software requirements are needed for the system to run properly**

Implementation: Putting the system to work (acceptance by the user)

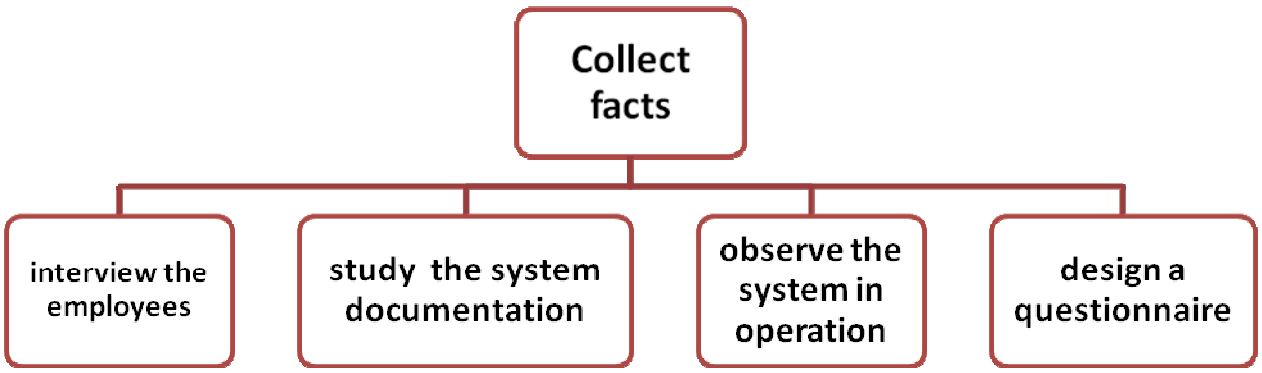
- Installing hardware and software
- Writing programs
- Training staff
- Testing the system regularly
- Writing documentation

Review :

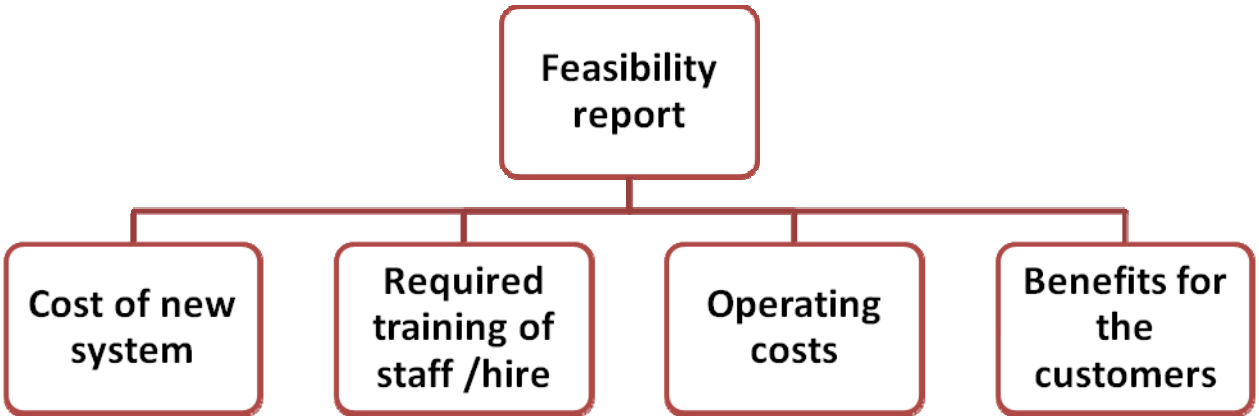
- Correct errors that might occur
- Change the system for new requirements
- Modify the system to do new tasks

(b) One of the stages of a feasibility study is fact-finding

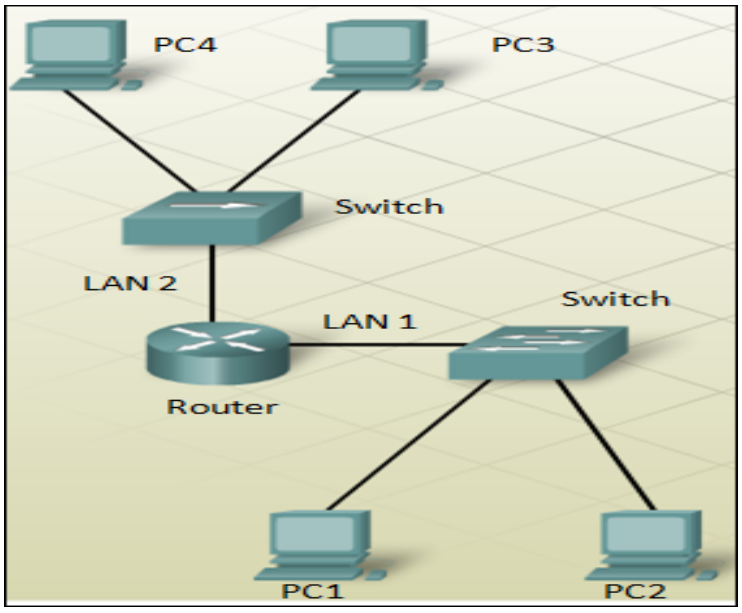
(i) Describe briefly three methods of fact-finding that the system analyst could use



(ii) Give three items that must be include in the feasibility report to help the manger decide what to do



34- Draw a labeled diagram of a local area network (LAN1) which can also communicate with other networks



Using a router, LAN1 which consists of PC1 and PC2 can communicate with LAN 2 which consists of PC4 and PC3

35- A travelling salesperson uses a laptop and a modem to log on to an internet service provider (ISP) to read his e-mails

(a) Explain why a modem is needed to communicate with the ISP

modem changes analog signals to digital signals when it receives data and changes digital signals to analog signals when it sends data.

(b) Describe two ways that the ISP file server will check that the salesperson is an authorized user

The server asks the salesperson to enter the username and password

The system server asks the user to answer a set security question and to enter the set email address

(c) Describe three services, other than email and a connection to the Internet, that the ISP may offer

free software, news, sports and weather forecast

(d) Explain what the Internet is

The internet is a WAN/a network of WANs/ the biggest network in the world. The Internet offers a large amount of information and connects computers all over the world.

36- State two advantages and two disadvantages for a business of writing a program instead of buying a software package

Advantage of writing a program	Disadvantage of writing a program
The program is tailored to satisfy specific tasks	Expensive to hire programmers or hire the services of some software firm
The program can be easily modified to do other tasks in the future	It takes a lot of time to have the program written

37- Describe the three types of test data that should be used when testing a program**.**

Normal test data	Extreme test data	Abnormal test data
Values valid for use with expected results	**Data at extreme ends of the data set**	**Data outside normal range**
Data expected from normal use	**Shouldn't produce any errors**	**Should produce error messages**
Should not produce any error messages	**Checks validation routines permit data**	**Checks if validation routines work**
		Check to ensure program doesn't crash

38- A transposition error transforms a number into another number by interchanging two of its digits. Explain how a computer can be organized to detect transposition errors

Using a check digit evaluation: A check digit is a digit calculated from the other digits of the number and attached to it for validation purposes. When a number is entered the check digit is recalculated and compared with the one entered.

39- Give two ways, other than unemployment, that the introduction of computers has affected those who make cartoon films:

(1) some might have to be trained to use the new system.

(2) de-skilling (the effect on workers who once needed a particular skill to do a job but no longer need it because it has been taken over by new technology)

40- Read this algorithm

```
counter =0
 input character
While Character is not a full stop do
  If character = space then
       counter =counter +1
   endif
   input  Character
endwhile
Number =counter +1
output Number
```

(a) what is the output if the following is input?

The exams are going to be easy.

7

(b) what is the purpose of the algorithm?

It counts the number of words in an inputted sentence.

(c)Why will the following input cause problems

The exams were hard

There are too many spaces between exams and were and this will produce an incorrect number of words. There is no rogue value (full stop) at the end of the sentence and so the algorithm will fail to terminate.

41- A company receives telephone orders from customers for flowers and then sends the flowers by post. In order to do this the company needs to ask for the customer's name, address, telephone number, credit card number and the cost of the flowers required. In addition the name and address of the person who is to receive the flowers must be obtained

(a) Design a suitable screen display for entering this data

Flowers Order Form

Customer's Details
Name:
Address line 1:
Address line 2:
Phone number:
Credit card number: Expiry date:

Flower's details:
Description:
Cost:

Recipient's Details:
Name:
Address line 1:
Address line 2:

Comment to write on delivery card

Continue | Reset

(b) The computer operator checks the data with the customer before entering the data into the customer database . Describe two different validation checks that could be done on this data

presence check : e.g. credit card number field cannot be blank

Type check : e.g. telephone number must be numeric

Length check: e.g. telephone number must have a certain number of digits

42- A user switches on a microcomputer which is connected to a network. He then word processes and prints a letter. Describe three tasks that the network operating system might be required to do during this process.

(1) Asks the user for a user name and password

(2) Controls the loading of the word processor into the RAM of the user's computer and running it

(3) Controls the use of the printer

43- State three effects on society due to the increase of businesses using e-commerce

(1) Some jobs were lost as some traditional shops/banks closed down

(2) An increase in small businesses has been established

(3) E-commerce reduced travelling and this leads to less pollution

44- Give one reason why a company may use parallel running as a method of changing from the manual system to a computer-based system

to compare the results of the two systems for a certain period of time and if the new system fails, the old manual system is up-to-date

45- In a school, students can use laptop computers which link to the school's wireless network.

(a) State two advantages to students of using this system rather than desktop computers located in certain computer rooms

(1) Portability: The laptop can be used in many places in the school to link to the wireless network (in the library, in the class, in the lab) and the student can sit anywhere

(2) Can be used as a standalone computer away from school

(b) Give two disadvantages of using laptop computers rather than using desktop computers.

(1) easily stolen/damaged

(2) difficult to use the in-built mouse

(3) more expensive

(4) need recharging from time to time

46- Virtual reality is used in exploring 3D buildings designs.

(a) Give two examples of the special hardware needed to interact with a virtual reality system

(1) special (data) helmet/headset

(2) data gloves

(3) joysticks

(4) data goggles

(b) Give two advantages of using virtual reality

(1)The user feels as a part of the simulation using hearing/touch/sight senses

(2)Allows user to try out dangerous tasks beforehand (such as viewing inside a chemical plant)

(c) Give another example of an application of virtual reality

3D Games, medical training, investigating problems in a chemical/nuclear plant

47- A shopping mall has multimedia kiosks linked to a central computer.

(a) State two input devices, other than a keyboard, which might be used at the multimedia kiosks

touch screen/light-pen tracker ball microphone

(b) State one advantage and one disadvantage for the mall of providing multimedia kiosks

Advantage : 1) Mall can advertise services/products 2) 24/7 service

3) Mall can get revenue from other advertisers 4) quicker response to customer inquiries

Disadvantage: 1) cost of maintenance 2) viruses 3) hacking 4) central computer might crash

48- Name three devices used for automatic data capture

Bar code reader, sensors, OMR (Optical mark reader), Microphone, MICR, Smart card reader

49- Some microprocessor-controlled devices do not need an operating system

(i) give one example of such a device

microwave oven, digital watch, automatic washing machine

(ii) Give one reason why it does not need an operating system

Has only one set of tasks to do

Simple, never changing hardware

Simple input expected from keypad/buttons

50- A small company sells 200 items per day from three departments: Linens (code L) Perfumes (code P) Toys (code T)

Each item is identified by the department code and 3 digits . for example P156. Write an algorithm , using pseudo code or otherwise, which monitors the sale of the 200 items each day. The following inputs , processing and outputs are all part of the monitoring process:

- **Input item identification**
- **Calculate number of items per day for each of the three departments**
- **Output the percentage of the total items per day by each department**
- **Only valid codes must be accepted**

```
CounterL=0
CounterP=0
CounterT=0

for itemcounter =  1   to 200
     repeat
         input  itemCode
    until (L001 <= itemCode <= L999 or P001 <= itemCode <= P999
                          or  T001 <= itemCode <= T999)
     If (L001 <= itemCode <= L999)
      CounterL= CounterL +1
     If (P001 <= itemCode <= P999)
      CounterP= CounterP +1
     If (T001 <= itemCode <= T999)
      CounterT= CounterT +1
Next itemcounter
percentL= (CounterL* 100)/200
percentP= (CounterP* 100)/200
percentT= (CounterT* 100)/200
Print “percent item sold for Linens is“, percentL,”%”
Print “percent item sold for Perfumes is“, percentP,”%”
 Print “percent item sold for Toys is“, percentT,”%”
```